Assignment 2

Textbook Assignment: "Airfield Lighting." Pages 2-1 through 2-24. "Electrical Load Requirements." Pages 3-1 through 3-10.

Learning Objective: Recognize the various components in an airfield lighting system.

2-1. Airfield lighting configurations on naval bases in the United States and overseas conform to those standards established by

1. the Federal Aviation Administration
2. Air Force regulations
3. the Department of Transportation
4. international agreement

2-2. Which of the following types of airfields is designed to be used by a detachment of KC-130 tanker aircraft?

1. Vertical takeoff and landing (VTOL)
2. Strategic expeditionary landing field (SELF)
3. Both 1 and 2 above
4. Vertical short takeoff and landing (VSTOL)

2-3. Which, if any, of the following components is located in the airfield lighting vault?

1. Lighting control panel
2. Emergency generator
3. Master sequence timer
4. None of the above

2-4. The lighting vault should be located approximately how many feet from the runway to prevent interference with operations?

1. 1,500
2. 2,000
3. 2,500
4. 3,000

2-5. If the control cable leads terminate into actuating coils of the pilot relays, at what maximum number of feet from the lighting vault can the control tower be located?

1. 5,875
2. 7,350
3. 8,250
4. 10,000

2-6. When you are grounding the lighting vault, approximately how many feet apart should you place the ground rods?

1. 5
2. 6
3. 7
4. 8

2-7. What is the primary purpose of the isolation transformer?

1. To maintain constant current in a series circuit
2. To maintain constant current in a parallel circuit
3. To maintain a closed loop in the primary of a series circuit when a lamp failure occurs
4. To maintain a closed loop in the primary of a parallel circuit when a lamp failure occurs

2-8. What voltages are found on the bus bars in the airfield lighting vault?

1. 2,400 volts and 240/120 volts
2. 4,160 volts and 240/120 volts
3. 2,400 volts and 480/240 volts
4. 2,400/4,160 volts and 480/240 volts

2-9. An automatic changeover switch is used to

1. pick up emergency power
2. transfer vault control to the tower
3. turn on the beacon light at dusk
4. shift control to the pilot relays

2-10. Why are constant-current regulators used in an airfield lighting system?

1. To isolate the primary circuit from the runway light
2. To provide constant power to the control tower
3. To prevent short-circuit faults in the runway lights
4. To maintain correct output level, depending on the load

2-11. Which of the following devices are used to obtain a constant-current output in the lighting circuit?

1. Saturable reactors
2. Resonant circuits
3. Moving transformer cores
4. Silicon-controlled rectifiers

2-12. Which of the following devices compensate for voltage drop in an airfield lighting control circuit?

1. Constant-current regulators
2. Transformers
3. Low-burden pilot relays
4. Coaxial cables

2-13. The runway lights may be controlled from two different locations. What device determines which location is used?

1. Transfer-relay cabinet
2. Pilot-relay cabinet
3. Changeover switch
4. Master sequence timer

Learning Objective: Identify the installation and maintenance procedures and safety precautions related to airfield lighting systems.

2-14 What color are runway edge lights?

1. White (clear)
2. Green
3. Red
4. Blue

2-15. Runway edge lights are equally spaced along both sides of the runway at distances not to exceed how many feet?

1. 100
2. 200
3. 300
4. 400

2-16. The minimum loading for airfield lighting constant-current regulators is what percent of the rated kilowatt output?

1. 25
2. 50
3. 75
4. 85

2-17. What color identifies taxiway lights?

1. White (clear)
2. Green
3. Red
4. Blue

2-18. What is the preferred length of an approach lighting system?

1. 500 ft
2. 1,000 ft
3. 1,500 ft
4. 3,000 ft

2-19. The visual approach slope indicator (VASI) lighting system assists the pilot to

1. determine the start of the runway
2. make a ground-controlled approach landing
3. make a visual-glide-slope approach landing
4. determine the length of the runway

2-20. The power for the runway-distance-marker lights should be supplied by

1. the approach lighting circuit
2. the taxiway lighting circuit
3. the threshold lighting circuit
4. a separate series circuit

2-21. The purpose of threshold lights is to mark

1. obstructions at the end of the runway
2. the entrance to the taxiway
3. the overrun area of the runway
4. the beginning and ending of the runway

2-22. What color identifies obstruction lights?

1. White (clear)
2. Green
3. Red
4. Blue

2-23. How many feet apart should obstruction lights be mounted on a 750-foot transmitting tower?

1. 100
2. 150
3. 200
4. 250

2-24. Which of the following descriptions correctly portrays an airport beacon light for a military air station?

1. Red and green
2. Red and white
3. Green and double-peaked white
4. Blue and double-peaked white

2-25. A hazard beacon light mounted on a smokestack flashes how many times per minute?

1. 18
2. 26
3. 45
4. 60

2-26. A beacon light located less than 800 feet from the vault is usually supplied with which of the following power supplies?

1. 80/110 volts
2. 120/24O volts
3. 249/480 volts
4. 2,400 volts

2-27. The 1,000-foot light bar of a strobe light system is also known as the

1. downwind bar
2. upwind bar
3. abort bar
4. decision bar

2-28. The strobe light system may be turned on and off independently or controlled by what light switch?

1. Approach
2. Threshold
3. Runway
4. Taxiway

2-29. A strobe light in a runway lighting system peaks at what candlepower?

1. 3,000
2. 30,000
3. 3,000,000
4. 30,000,000

2-30 What component controls the firing sequence of the strobe lights?

1. Full-wave bridge rectifier
2. 120-volt ac timing signal
3. Autotransformer
4. 22-kilohm resistor

2-31 The purpose of the green light mounted on the strobe light local remote control panel is to indicate that

1. the unit is switched to local control
2. the unit is switched to remote control
3. there is a fault in the system
4. one or more strobe lights have burned out

2-32. The main power transformer in the monitor and control chassis of a strobe system is energized by what power supply?

1. 95-volt dc
2. 120-volt ac
3. 120-volt dc
4. 240-volt ac

2-33. The adjusted resistance of 7,333 ohms in the monitoring circuit of a strobe system is equal to

1. a 22-kilohm resistance at the light unit
2. two 22-kilohm resistors in parallel
3. three 22-kilohm resistors in parallel
4. three 22-kilohm resistors in series-parallel

2-34. To turn off the "lamps out" alarm in the strobe light circuit,

1. move the selector switch to the next position
2. readjust the sensitivity rheostat
3. change the variable resistor
4. change the voltage setting taps on the transformer

2-35. When the master sequence timer is controlling the strobe light system, each contact closes how many times per second?

1. One
2. Two
3. Three
4. Four

2-36. During visual inspections of airfield lighting systems, cables should be checked for

1. cuts and bruises
2. proper size
3. proper length
4. correct location

2-37. During maintenance, molded plug connectors are connected, seated, and then

1. installed
2. checked for moisture
3. taped
4. tested with a hi-pot

2-38. For how many continuous hours should each airfield lighting circuit be operated at maximum brightness during an operational check?

1. 1
2. 2
3. 6
4. 8

2-39. The normal amount of time required for a flash capacitor to bleed down is

1. 5 seconds
2. 10 seconds
3. 1 minute
4. 5 minutes

2-40. The normal radius for an underground cable bend is how many times the cable diameter?

1. 3 to 5
2. 5 to 12
3. 7 to 9
4. 9 to 12

2-41. What danger exists if too many lamps burn out in the secondary of an airfield lighting system?

1. The isolation transformer will overload
2. The remaining lamps will dim
3. The primary current may rise high enough to damage the regulator
4. The excessive voltage could damage the distribution transformer

2-42. If a string of lights in a circuit does NOT light, more than likely, the trouble is

1. an open circuit
2. a short to ground
3. a cross circuit
4. improper power

2-43. The maximum run of ducted cable between manholes is how many feet?

1. 500
2. 600
3. 750
4. 1,000

Learning Objective: Point out the requirements in the installation of a dwelling feeder system.

2-44. The total load of a dwelling unit can be divided into how many categories?

1. One
2. Two
3. Three
4. Four

2-45. The NEC® states that receptacles rated 20 amperes or less may be calculated with what load category?

1. Laundry load
2. Small appliance load
3. Special appliance load
4. General lighting load

2-46. The general lighting load for a 35-foot by 60-foot single dwelling is how many volt-amperes (VA)?

1. 2,100
2. 4,200
3. 5,500
4. 6,300

2-47. How many 20-ampere branch circuits must be installed in the kitchen, pantry, breakfast room, and dining room only?

1. One
2. Two
3. Three
4. Four

2-48. The laundry branch circuit in a dwelling should usually serve at least one additional receptacle besides the laundry receptacle.

1. True
2. False

2-49. Which, if any, of the following appliances may be supplied by the general lighting circuits?

1. Garbage disposal
2. Dishwasher
3. Air conditioner
4. None of the above

2-50. Determine the general lighting and receptacle load for a dwelling that has a 6,300-VA lighting load, two 1,500-VA appliance circuits, and one 1,500-VA laundry circuit.

1. 3,000 VA
2. 4,250 VA
3. 5,730 VA
4. 7,800 VA

2-51. Which of the following demand factors may be applied if there are four or more fixed appliances on a branch circuit?

1. 66 percent
2. 75 percent
3. 80 percent
4. 100 percent

2-52. What is the demand load, in kilowatts, for one clothes dryer rated at 5 kilowatts?

1. 4.5
2. 5.0
3. 6.0
4. 7.5

2-53. What is the demand load, in kilowatts, for a 12-kilowatt household electric range?

1. 8
2. 8 3/4
3. 9 1/2
4. 12

2-54. Which of the following demand factors should you use when you determine the branch circuit conductor size for heating equipment?

1. 75 percent
2. 100 percent
3. 125 percent
4. 150 percent

2-55. All motor loads are classified as

1. intermittent duty
2. heavy duty
3. noncontinuous duty
4. continuous duty

IN ANSWERING QUESTIONS 2-56 THROUGH 2-62, REFER TO THE APPROPRIATE DEMAND TABLES IN CHAPTER 3 OF THE TEXT AND USE THE FOLLOWING INFORMATION:

A certain 2,100-sq-ft dwelling has two small appliance circuits and one laundry circuit with the following special appliance circuits:

One 9 -kVA range
One 1.5-kVA dishwasher
One 5.5-kVA water heater
One 15 -kVA central heater

2-56. What is the minimum size branch circuit required to supply the electric range?

1. 35 amperes
2. 40 amperes
3. 50 amperes
4. 60 amperes

2-57. What is the minimum size branch circuit required to supply the water heater?

1. 25 amperes
2. 30 amperes
3. 35 amperes
4. 40 amperes

2-58. What is the minimum size branch circuit required to supply the central heater?

1. 60 amperes
2. 70 amperes
3. 80 amperes
4. 90 amperes

2-59. The most important point to remember when determining the size of the service-entrance conductors is to

1. size the conductors one size larger than necessary to allow for expansion
2. size the conductors two sizes larger than necessary to allow for expansion
3. ensure that the conductors are large enough to carry the load
4. ensure that the conductors are large enough to carry 80 percent of the total demand

2-60. A service-entrance conductor for a single-family dwelling with six or more two-wire circuits is required to have a three-wire service and a minimum of how many amperes?

1. 60
2. 100
3. 125
4. 200

2-61. If phase A on a 240-volt, single-phase-system carries a 60-ampere, 120-volt load, and phase B carries an 80-ampere 120-volt load, what maximum current (in amperes) is the neutral conductor required to carry?

1. 20
2. 60
3. 80
4. 140

2-62. When computing the size of the neutral conductor, you can omit all single-phase and three-phase 240-volt loads except feeders supplying which of the following appliances?

1. Electric ranges
2. Water heaters
3. Central heaters
4. Air conditioners